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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/545,785 04/07/00 SOWLATI

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MMC2/0323

EXAMINER

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INTELLECTUAL PROPERTY DEPARTMENT
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NADAV, D

ART UNIT	PAPER NUMBER
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2811

DATE MAILED:

03/23/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/545,785

Applicant(s)
Sowlati et al.

Examiner
ORI NADAV

Group Art Unit
2811



☒ Responsive to communication(s) filed on Jun 21, 2000

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-11 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-11 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☒ The drawing(s) filed on Apr 7, 2000 is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). 2

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "27" and "30" have both been used to designate conductive via and dielectric layer. Correction is required.
2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Figure 2B clearly depicts dielectric layer comprising vacuum. Therefore, a silicon oxide dielectric layer must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
4. Claims 1-11 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. There is no support in the specification for second level

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lines formed over first level lines, wherein the first and second level lines are arranged in vertical rows, as recited in claim 1.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 10-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claimed limitations of second level lines formed over first level lines, wherein the first and second level lines are arranged in vertical rows, as recited in claim 1, is unclear as to how a first line can be over a second line and at the same time be arranged next to each other in vertical rows.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-3 and 5-7, insofar as in compliance with 35 U.S.C. 112, are rejected under 35 U.S.C. 102(b) as being anticipated by Ng et al. (5,583,359).

Ng et al. teach in figure 8 a capacitor 200 over a substrate 202 comprising a second level of electrically conductive lines 212 comprising metal or polysilicon (column 9, lines 65-66) formed over first level of electrically conductive lines 210, wherein the first and second level lines are arranged in vertical rows, a dielectric layer 250 (figure 9) formed between the first and second level lines, at least one conductive via 230 connecting the lines in each of the rows, thereby forming a parallel array of vertical capacitor plates, and electrically opposing nodes forming the terminals of the capacitor, the parallel array of vertical capacitor plates electrically connected to the opposing nodes in an alternating manner so that the plates have alternating electrical polarities (figures 10-11).

Regarding claims 5 and 6, Ng et al. teach in figure 8 at least a third level of electrically conductive lines 214 formed over the second level of electrically conductive lines 212 in manner which extends the rows vertically, a dielectric layer 252 (figure 9) formed between the third and second level conductive lines, at least one conductive via 230 connecting the second and third level lines in each of the rows.

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Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-3, 5-7 and 4, 8-11, insofar as in compliance with 35 U.S.C. 112, are rejected under 35 U.S.C. 103(a) as being unpatentable over Ng et al.

Ng et al. teach substantially the entire claimed structure, as applied to claim 1 above, except a dielectric layer comprising silicon dioxide.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a dielectric layer comprising silicon dioxide in Ng et al.'s device, because silicon dioxide is a conventional dielectric material, of which judicial notice may be taken.

Regarding claims 8-11, Ng et al. teach a capacitor being formed using known CMOS techniques (column 2, lines 56-57). Therefore, the capacitor comprises a sub-micron CMOS structure, as claimed.

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11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Reference N is cited as being related to vertical capacitors having mesh electrode

Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to *Examiner Nadav* whose telephone number is **(703) 308-8138**. The Examiner is in the Office generally between the hours of 7 AM to 3 PM (Eastern Standard Time) Monday through Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas, can be reached at **(703) 308-2772**.

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Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is **308-0956**

Ori Nadav, Ph.D.

March 19, 2001

William Mintel

William Mintel
Primary Examiner
Art Unit 2811